Assessment of Maternal and Neonatal SARS-CoV-2 Viral Load, Transplacental Antibody Transfer, and Placental Pathology in Pregnancies During the COVID-19 Pandemic

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Abstract

Key Points Question What key biological characteristics of maternal severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and placental function and pathology have implications for vertical transmission and neonatal protection? Findings In this prospective cohort study including 127 pregnancies, there was no maternal viremia, placental infection, or vertical transmission of SARS-CoV-2. Compromised transplacental transfer of anti–SARS-CoV-2 antibodies with robust transfer of influenza-specific immunity and nonoverlapping placental expression of SARS-CoV-2 receptors angiotensin-converting enzyme 2 and transmembrane serine protease 2 were noted. Meaning These findings suggest that, although low rates of maternal viremia and patterns of placental SARS-CoV-2 receptor distribution may underlie the rarity of vertical transmission, reduced transplacental transfer of anti–SARS-CoV-2 antibodies may leave neonates at risk for infection.